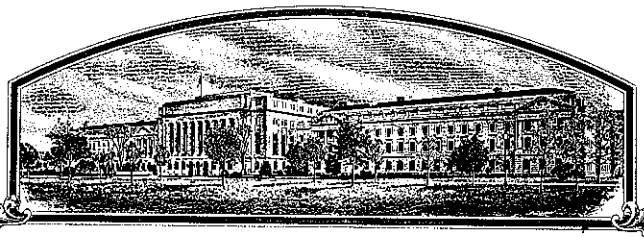


No. 9200194

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Pioneer Hi-Bred International, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'9312'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington, D.C. *this* 30th *day of* September *in the year of our Lord one thousand nine hundred and* ninety-four.

Attest:

Kenneth B. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Mike Espy
Secretary of Agriculture

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Office, OIRM, Room 404-W, Washington, D.C. 20250; and to the Office of Management and Budget, Paperwork Reduction Project (OMB #0581-0055), Washington, 20250.

FORM APPROVED: OMB 0581-0055, Expires 1/31/91

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) *(as it is to appear on the Certificate)*
Pioneer Hi-Bred International, Inc.

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO.

3. VARIETY NAME
9312

4. ADDRESS *(street and no. or R.F.D. no., city, state, and ZIP)*
700 Capital Square
400 Locust Street
Des Moines, IA 50309

5. PHONE *(Include area code)*
515-270-3414

FOR OFFICIAL USE ONLY

PVPO NUMBER
9200194

FILING
Date: May 20, 1992
Time: ☐ A.M. ☑ P.M.

FEES RECEIVED
Filing and Examination Fee: $2150.-
Date: May 14, 1992
Certificate Fee: $250-
Date: Sept. 16, 1994

6. GENUS AND SPECIES NAME
Glycine max

7. FAMILY NAME *(Botanical)*
Leguminosae

8. CROP KIND NAME *(Common Name)*
Soybean

9. DATE OF DETERMINATION
September 1988

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)*
Corporation

11. IF INCORPORATED, GIVE STATE OF INCORPORATION
Iowa

12. DATE OF INCORPORATION
1926

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS

James E. Miller, Ph.D.
7301 NW 62nd Ave., P.O. Box 85
Johnston, IA 50131-0085

Mike Roth (copy)
700 Capital Square, 400 Locust Street
Des Moines, IA 50309

PHONE *(Include area code)*:

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow INSTRUCTIONS on reverse)*

a. ☒ Exhibit A, Origin and Breeding History of the Variety.
b. ☒ Exhibit B, Novelty Statement.
c. ☒ Exhibit C, Objective Description of Variety.
d. ☒ Exhibit D, Additional Description of Variety.
e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.
f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office 5-15-92.
g. ☒ Filing and Examination Fee ($2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See section 83(a) of the Plant Variety Protection Act.)*
☐ YES *(If "YES," answer items 16 and 17 below)* ☒ NO *(If "NO," skip to item 18 below)*

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☐ YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ YES *(If "YES," through* ☐ Plant Variety Protection Act ☐ Patent Act. Give date: _____.)
☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
☐ YES (If "YES," give names of countries and dates)
☒ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT *(Owner(s))*	CAPACITY OR TITLE	DATE
James E. Miller	Director, Worldwide Soybean Research	5-8-92
SIGNATURE OF APPLICANT *(Owner(s))*	CAPACITY OR TITLE	DATE

9312 Soybean (April, 1992)

Exhibit A: Variety 9312 was selected from a F5 population resulting from a cross between A3307 and 9402. This population was advanced to the F5 generation by modified single-seed descent. The F5 progeny row was observed and selected in Illinois in the summer of 1988. Variety 9312 has undergone yield testing each year from 1989 to 1991.

One acre of variety 9312 breeder seed was grown during the winter of 1990-91 in Chile. Sixteen acres of parent (foundation) seed were grown in 1991.

Exhibit B: Variety 9312 is most similar to varieties 9402 and Cartter. However, variety 9402 matures 6 days later than 9312 (Table 1) and Cartter lodges significantly more than variety 9312 (Table 2).

Table 1. 9402 vs 9312 for maturity.

All observations are from plots planted using a randomized complete block design. Planted plot length was 21 feet, trimmed to 15 feet. Plot width was 4 30 inch rows, or 10 feet. Maturity was scored as the number of days from planting until 95% of the pods in the plot were mature. All data was taken in 1991.

REP	9402 X1	9312 X2	X1-X2	(X1-X2)**2
1	125	116.5	8.5	72.25
2	115.5	109	6.5	42.25
3	124	119	5	25
4	127.5	117.5	10	100
5	116.5	109	7.5	56.25
6	125	115.5	9.5	90.25
7	112.5	109.5	3	9
8	127	120		
9	123	118		
10	125	118.5		
11	113	109	4	16
12	126	118	8	64
13	120	113	7	49
14	127.5	118.5	9	81
15	117	111	6	36
sum	1825	1722	84	641
ave	107.3	101.3	4.941	

SD**2= (641 - (84**2 / 15)) / (15*14)
SD**2= 0.81238
SD= 0.90132
t = (84 / 15) / 0.90132
t = 6.21311 ** significant 1% level
DF= 14

n= 15

ave maturity of 9402 = 107.324
ave maturity of 9312 = 101.294

Table 2. 9312 vs. Cartter for lodging.

All observations are from plots planted using a randomized complete block design. Planted plot length was 21 feet, trimmed to 15 feet. Plot width was 4 30 inch rows, or 10 feet. Lodging was scored on a 1 to 9 scale. On this scale a score of 1 means all plants were completely procumbent, while a score of 9 means all plants were completely upright. Data was collected in the 1990 and 1991 growing years.

1990

	9312	Cartter		
REP	X1	X2	X1-X2	(X1-X2)**2
1	6	5.5	0.5	0.25
2	6.5	6	0.5	0.25
3	7.7	7	0.7	0.49
4	9	9	0	0
5	7	6.7	0.3	0.09
6	8	6	2	4
7	8.7	7.3	1.4	1.96
sum	52.9	47.5	5.4	7.04
ave	7.557	6.786	0.771	

SD**2= (7.04 - (5.4**2 / 7)) / (7 * 6)
SD**2= 0.06844
SD= 0.2616
t = (5.4 / 7) / 0.2616
t = 2.94887 * significant 5% level
DF= 6

n= 7

ave lodging for 9312 = 7.55714
ave lodging for Cartter = 6.78571

1991

	9312	Cartter		
REP	X1	X2	X1-X2	(X1-X2)**2
1	8	4	4	16
2	7	5	2	4
3	7.5	6	1.5	2.25
4	8	7	1	1
5	8	5	3	9
6	8	7.5	0.5	0.25
7	9	8	1	1
8	8	8	0	0
9	8.5	6.5	2	4
10	8	6.5	1.5	2.25
sum	80	63.5	16.5	39.75
ave	8	6.35	1.65	

SD**2= (39.75 - (16.5**2 / 10))/(10*9)
SD**2= 0.13917
SD= 0.37305
t = (16.5 / 10) / 0.37305
t = 4.42299 ** significant 1% level
DF= 9

n= 10

ave lodging for 9312 = 8
ave lodging for Cartter = 6.35

1990 and 1991 combined

	9312	Cartter		
REP	X1	X2	X1-X2	(X1-X2)**2
sum	132.9	111	14.4	24.54
ave	7.818	6.529	0.847	

SD**2= (24.54 - (14.4**2/17)) /(17*16)
SD**2= 0.04538
SD= 0.21302
t = (14.4 / 17) / 0.21302
t = 3.97648 ** significant 1% level
DF= 16

n= 17

ave lodging for 9312 = 7.81765
ave lodging for Cartter = 6.52941

9200194

EASYLINK 0385461L001 10AUG94 17:26/17:26 EST
FROM: 478327 PIOSEED DMS
333439 PIONEER HIBRED
PIONEER DATA SYSTEMS (CRN: NONE)
TO: 3015045291

PIONEER HI-BRED INTERNATIONAL, INC.
PLANT BREEDING DIVISION

7301 NW 62nd AVENUE
P.O. BOX 85
JOHNSTON, IA 50131

FAX TRANSMISSION

TO: Jeffrey L. Strachan

FAX NO: (301) 504-5291 PHONE NO: (301) 504-5489

FROM: John Grace

FAX NO: (515) 253-2221 PHONE NO: (515) 270-3582

DATE: August 10, 1994

TOTAL PAGES TRANSMITTED (INCLUDING THIS SHEET): 1

If you have any problems with this transmission or do not receive all pages, please call 515-270-3582 as soon as possible.

COMMENTS:

Addition to Exhibit A of PVP Application 9200194, '9312' (August, 1994).

Variety '9312' has undergone extensive testing from 1989 to 1993, and has been observed to be stable for all plant traits from generation to generation.

Addition to Exhibit A of PVP Application 9200195, '9831' (August, 1994).

Variety '9831' has undergone extensive testing from 1989 to 1993, and has been observed to be stable for all plant traits from generation to generation.

4

FORM APPROVED: OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, MEAT, GRAIN & SEED DIVISION
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Soybean)

OBJECTIVE DESCRIPTION OF VARIETY
SOYBEAN (Glycine max L.)

NAME OF APPLICANT(S)	TEMPORARY DESIGNATION	VARIETY NAME
Pioneer Hi-Bred International, Inc.		9312

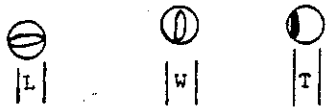
ADDRESS *(Street and No., or R.F.D. No., City, State, and Zip Code)*
700 Capital Square
400 Locust Street
Des Moines, IA 50309

FOR OFFICIAL USE ONLY
PVPO NUMBER
9200194

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g., [0][9]). Starred characters ★ are considered fundamental to an adequate soybean variety description. Other characters should be described when information is available.

1. SEED SHAPE:

[2]



1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)
2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)
3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)
4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

★ **2. SEED COAT COLOR: (Mature Seed)**

[1] 1 = Yellow 2 = Green 3 = Brown 4 = Black 5 = Other *(Specify)* _____

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

[2] 1 = Dull ('Corsoy 79'; 'Braxton') 2 = Shiny ('Nebsoy'; 'Gasoy 17')

★ **4. SEED SIZE: (Mature Seed)**

[1][5] Grams per 100 seeds

★ **5. HILUM COLOR: (Mature Seed)**

[6] 1 = Buff 2 = Yellow 3 = Brown 4 = Gray 5 = Imperfect Black 6 = Black 7 = Other *(Specify)* _____

★ **6. COTYLEDON COLOR: (Mature Seed)**

[1] 1 = Yellow 2 = Green

★ **7. SEED PROTEIN PEROXIDASE ACTIVITY:**

[2] 1 = Low 2 = High

★ **8. SEED PROTEIN ELECTROPHORETIC BAND:**

[ ] 1 = Type A ($SP1^a$) 2 = Type B ($SP1^b$)

★ **9. HYPOCOTYL COLOR:**

[1] 1 = Green only ('Evans'; 'Davis') 2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')
3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')
4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

★ **10. LEAFLET SHAPE:**

[3] 1 = Lanceolate 2 = Oval 3 = Ovate 4 = Other *(Specify)* _____

9200194

11. LEAFLET SIZE:

[2] 1 = Small ('Amsoy 71'; 'A5312') 2 = Medium ('Corsoy 79'; 'Gasoy 17') 3 = Large ('Crawford'; 'Tracy')

12. LEAF COLOR:

[2] 1 = Light Green ('Weber'; 'York') 2 = Medium Green ('Corsoy 79'; 'Braxton') 3 = Dark Green ('Gnome'; 'Tracy')

★ **13. FLOWER COLOR:**

[1] 1 = White 2 = Purple 3 = White with purple throat

★ **14. POD COLOR:**

[1] 1 = Tan 2 = Brown 3 = Black

★ **15. PLANT PUBESCENCE COLOR:**

[2] 1 = Gray 2 = Brown (Tawny)

16. PLANT TYPES:

[2] 1 = Slender ('Essex'; 'Amsoy 71') 2 = Intermediate ('Amcor'; 'Braxton') 3 = Bushy ('Gnome'; 'Govan')

★ **17. PLANT HABIT:**

[3] 1 = Determinate ('Gnome'; 'Braxton') 2 = Semi-Determinate ('Will') 3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

★ **18. MATURITY GROUP:**

[0][6] 1 = 000 2 = 00 3 = 0 4 = I 5 = II 6 = III 7 = IV 8 = V 9 = VI 10 = VII 11 = VIII 12 = IX 13 = X

★ **19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)**

BACTERIAL DISEASES:

★ [0] Bacterial Pustule *(Xanthomonas phaseoli* var. *sojensis)*

★ [1] Bacterial Blight *(Pseudomonas glycinea)*

★ [0] Wildfire *(Pseudomonas tabaci)*

FUNGAL DISEASES:

★ [1] Brown Spot *(Septoria glycines)*

Frogeye Leaf Spot *(Cercospora sojina)*

★ [0] Race 1 [0] Race 2 [0] Race 3 [0] Race 4 [0] Race 5 [ ] Other *(Specify)* _____

[0] Target Spot *(Corynespora cassiicola)*

[0] Downy Mildew *(Peronospora trifoliorum* var. *manshurica)*

[0] Powdery Mildew *(Microsphaera diffusa)*

★ [1] Brown Stem Rot *(Cephalosporium gregatum)*

[0] Stem Canker *(Diaporthe phaseolorum* var. *caulivora)*

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9200194

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

FUNGAL DISEASES: (Continued)

★ [1] Pod and Stem Blight *(Diaporthe phaseolorum* var; *sojae)*

[0] Purple Seed Stain *(Cercospora kikuchii)*

[1] Rhizoctonia Root Rot *(Rhizoctonia solani)*

Phytophthora Rot *(Phytophthora megasperma* var. *sojae)*

★ [1] Race 1 [1] Race 2 [1] Race 3 [1] Race 4 [1] Race 5 [0] Race 6 [1] Race 7

[1] Race 8 [1] Race 9 [1] Other *(Specify)* Races 10,12,13,17,19-20,25

VIRAL DISEASES:

[1] Bud Blight (Tobacco Ringspot Virus)

[1] Yellow Mosaic (Bean Yellow Mosaic Virus)

★ [1] Cowpea Mosaic (Cowpea Chlorotic Virus)

[1] Pod Mottle (Bean Pod Mottle Virus)

★ [1] Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

Soybean Cyst Nematode *(Heterodera glycines)*

★ [0] Race 1 [0] Race 2 [2] Race 3 [2] Race 4 [ ] Other *(Specify)* _____

[0] Lance Nematode *(Hoplolaimus Colombus)*

★ [0] Southern Root Knot Nematode *(Meloidogyne incognita)*

★ [0] Northern Root Knot Nematode *(Meloidogyne Hapla)*

[0] Peanut Root Knot Nematode *(Meloidogyne arenaria)*

[0] Reniform Nematode *(Rotylenchulus reniformis)*

[ ] OTHER DISEASE NOT ON FORM *(Specify):* _____

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

★ [1] Iron Chlorosis on Calcareous Soil

[ ] Other *(Specify)* _____

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

[0] Mexican Bean Beetle *(Epilachna varivestis)*

[0] Potato Leaf Hopper *(Empoasca fabae)*

[ ] Other *(Specify)* _____

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	9402	Seed Coat Luster	9402
Leaf Shape	9402	Seed Size	9311
Leaf Color	Cartter	Seed Shape	9402
Leaf Size	Cartter	Seedling Pigmentation	9402

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data 9200194

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/ POD
				CM Width	CM Length	% Protein	% Oil		
9312 Submitted	117.2	1.6	97.3			45.1	20.8	15	
Cartter Name of Similar Variety	116.8	2.2	91.9			44.6	21.2	19	

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A_2 in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.

Exhibit D: In Exhibit C we have identified 9312 as susceptible to bacterial blight, brown spot, pod and stem blight, rhizoctonia root rot, bud blight, yellow mosaic, cowpea mosaic, pod mottle, seed mottle, and iron chlorosis. This does not mean that 9312 is any worse for these problems than other varieties of similar maturity. Rather, we do not consider 9312 to be immune to these problems. Therefore, we have chosen to be conservative and have identified the line as 'susceptible'.

A concern is that this will lead to incorrect classification of varieties based upon characteristics open to interpretation. However, we are attempting to submit forms which are as complete and accurate as possible.

Some applicants may not view the term 'resistance' as equivalent to the term 'immunity'. Similarly, some may not view 'susceptibility' as the utter failure of a variety under applicable conditions. It would be most helpful if resistant and susceptible varieties could be identified. If standards are known, then the terms 'resistant' and 'susceptible' have a consistent meaning to all applicants.

Table 3. Isozyme information for 9312

ACO2	ACO3	ACO4	ACP	DIA	ENP	IDH1	IDH2	MDH	MPI	PGM	PHI
1	1	1	A	B	A	2	1	B	A	1	1

9312 is an early group III variety. If group III maturities are divided in tenths, the relative maturity for 9312 is 3.1.

Exhibit E: Pioneer Hi-Bred International, Inc. is the sole, original, and first breeder of soybean variety 9312, for which it solicits a certificate of protection.